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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,158	01/22/2002	Tsutomu Nakamura	020062	7925

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EXAMINER

SELBY, GEVELL V

ART UNIT	PAPER NUMBER
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2615

DATE MAILED: 12/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/051,158

Applicant(s)

NAKAMURA ET AL.

Examiner

Gevell Selby

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 5 and 7-14 is/are rejected.
- 7) ☒ Claim(s) 3, 6, 9, and 12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. **Claims 7-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

3. Regarding claims 7-12, the phrase "or the like" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "or the like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d). In order to complete the examination of the claims the term "or the like" will be deleted from the claims.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(c) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

5. **Claims 1, 2, and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakada, US 6,399,995.**

In regard to claim 1, Nakada, US 6,399,995, discloses a solid-state image pickup apparatus comprising:

a solid-state image pickup device chip (see figure 1C, element 2) having a bump formed thereon (see figure 1C, element 4), and a hermetic seal portion provided over the solid-state image pickup device chip having a flat-plate portion formed of a transparent member (see figure 1C, element 11 and column 2, lines 58-65) and a frame portion disposed on a side portion of a lower surface of the flat-plate portion (see figure 3, element 8: The polyimide tape frames the chip, connecting to the glass portion and the wiring);

said frame portion at least including a metal wiring (see figure 1C, element 5), a bump formed on said solid-state image pickup device chip and electrically connected to the metal wiring, and a sealed region for sealing the periphery of the bump by a sealing material (see column 2, line 66 to column 3, line 10).

In regard to claim 2, Nakada, US 6,399,995, discloses the solid-state image pickup apparatus according to claim 1, wherein said metal wiring is formed on the side portion of the lower surface of said flat-plate portion (see figure 1C element 4).

In regard to claim 13, Nakada, US 6,399,995, discloses the solid-state image pickup apparatus according to claim 1, wherein a wiring region is formed from an electrode pad provided on said solid-state image pickup device chip to a side surface so that an external terminal can be electrically connected to the wiring region or the

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electrode pad region (see figure 1, element 5).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. **Claims 4, 5, 7, 8, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakada, US 6,399,995.**

In regard to claims 4 and 5, Nakada, US 6,399,995, discloses the solid-state image pickup apparatus according to claims 1 and 2, respectively. The reference does not disclose wherein an anisotropic conductive material is used as said sealing material. It is well known in the art to use epoxy resin dispersed with metallic particles that provides anisotropic properties. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have been motivated to configure the sealing material of the Nakada reference in to be a conductive anisotropic material in order to provide a stronger longer lasting seal.

In regard to claims 7, 8, 10, and 11, Nakada, US 6,399,995, discloses the solid-state image pickup apparatus according to claims 1, 2, 4, and 5, wherein said frame portion has a function for screening light based on a coloring ~~or the like~~ of said sealing

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material (see figure 1B and column 3, lines 3-10: The sealing material, wiring and bumps screen light from entering the sensing area any way except for through the glass).

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakada, US 6,399,995, in view of Park et al., US 2001.0004128.

In regard to claim 14, Nakada discloses a fabricating method of solid-state image pickup apparatus having a hermetic seal portion provided over a solid-state image pickup device chip comprising a flat-plate portion formed of a transparent member and a frame portion disposed at a side portion of a lower surface of the flat-plate portion including the steps of:

integrally and correspondingly to each individual solid-state image pickup device chip, forming a hermetic seal portion comprising a flat-plate portion made of a transparent member, and a frame portion disposed at a side portion of a lower surface of the flat-plate portion having a metal wiring, a bump formed on solid-state image pickup device chip and electrically connected to the metal wiring, and a seal region for sealing the periphery of the bump by a sealing material.

The Nakada reference does not disclose using this method over an entire wafer having a large number of solid-state image pickup device chips formed thereon and separating the wafer having the integrally formed hermetic seal portions thereon into solid-state image pickup device chips each having an individual hermetic seal portion.

Park et al., US 2001.0004128, disclose a manufacturing method of a solid-state image pickup device wherein large number of solid-state image pickup device chips are formed on a wafer (see figures 3A-3D) and separating the wafer having the integrally

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formed hermetic seal portions thereon into solid-state image pickup device chips each having an individual hermetic seal portion (see figure 3D, element 2).

It would have been obvious to one of ordinary skill in the art at the time of invention to have been motivated to modify Nakada, US 6,399,995, in view of Park et al., US 2001/0004128, to use the method over an entire wafer having a large number of solid-state image pickup device chips formed thereon and separating the wafer having the integrally formed hermetic seal portions thereon into solid-state image pickup device chips each having an individual hermetic seal portion in order to create multiple devices quicker and more efficiently.

Allowable Subject Matter

9. Claims 3 and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In regard to claim 3, the prior art does not disclose that "the frame portion further includes a frame base portion and said metal wiring is formed on one surface of said frame base portion while the other surface of the frame base portion is adhered to said flat-plate portion" as claimed in claim 3. Claim 6 is also objected to for being dependent on claim 3.

10. Claims 9 and 12 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6,472,247, discloses a solid state imaging device with bumps on the sensor.

US 5,192,835, discloses a solid state imaging device with bumps on the sensor.


US 6,621,616, discloses a solid state imaging device with bumps on the sensor

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gevell Selby whose telephone number is 703-305-8623. The examiner can normally be reached on 8:00 A.M. - 5:30 PM (every other Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen can be reached on 703-308-9644. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gvs


TUAN HO
PRIMARY EXAMINER